

FIG. 1

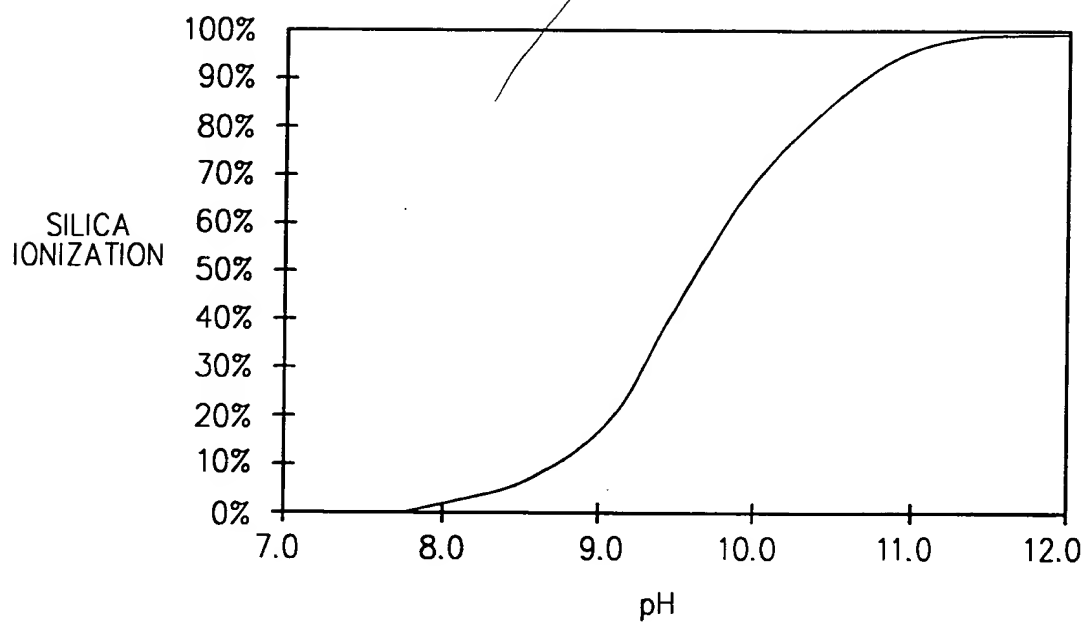
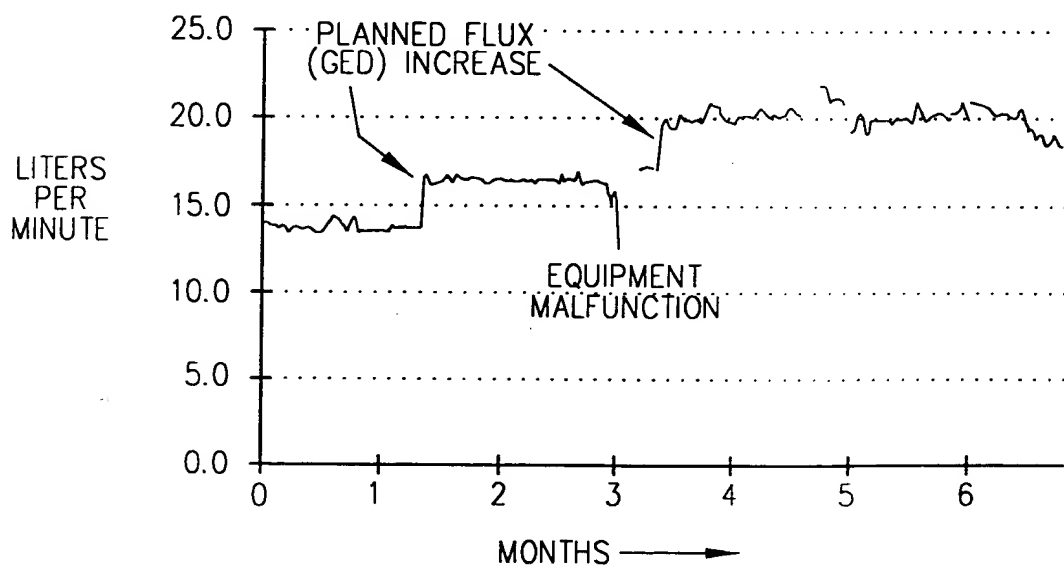
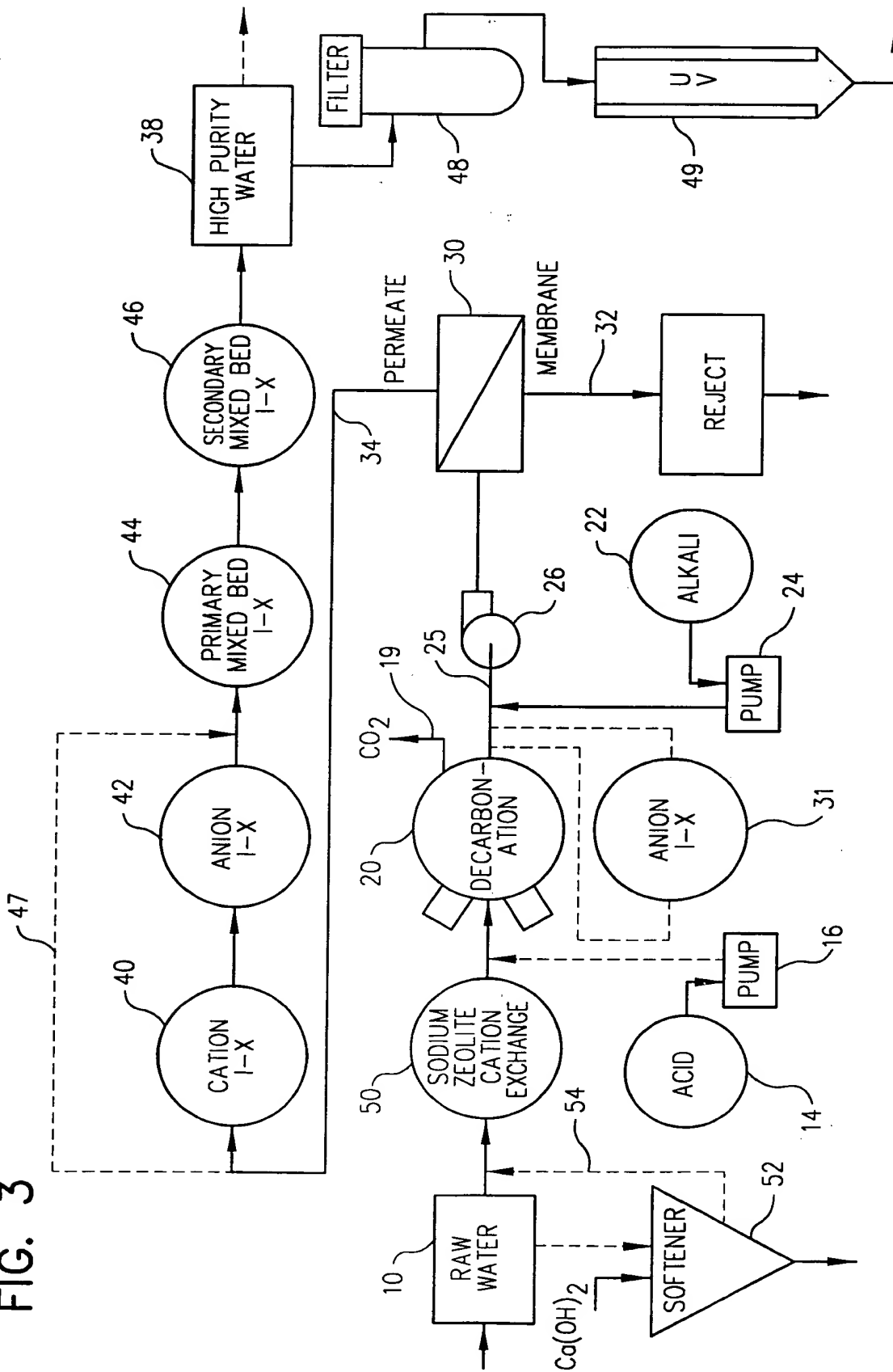


FIG. 6



The diagram illustrates a water treatment process for producing high purity water. The process begins with **RAW WATER** (10) entering a **WEAK ACID CATION EXCHANGE** (12) unit. This unit is supplied with **Na<sub>2</sub>CO<sub>3</sub>** (13) via a **PUMP** and **ACID** (14) via another **PUMP**. The output of the cation exchange unit goes to a **DECARBONATION** (20) unit, which releases **CO<sub>2</sub>** (19) and is supplied with **ALKALI** (22) via a **PUMP**. The water then passes through an **ANION I-X** (31) unit, which is also supplied with **ALKALI** (22) via a **PUMP**. The output of the anion exchange unit goes to a **PRIMARY MIXED BED I-X** (44) unit, which is supplied with **CO<sub>2</sub>** (19) and **ALKALI** (22) via a **PUMP**. The output of the primary mixed bed unit goes to a **SECONDARY MIXED BED I-X** (46) unit, which is supplied with **CO<sub>2</sub>** (19) and **ALKALI** (22) via a **PUMP**. The output of the secondary mixed bed unit goes to a **FILTER** (48) and then to a **U V** (49) unit. The final output is **HIGH PURITY WATER** (38). The entire process is labeled with a dashed line 47.

FIG. 3



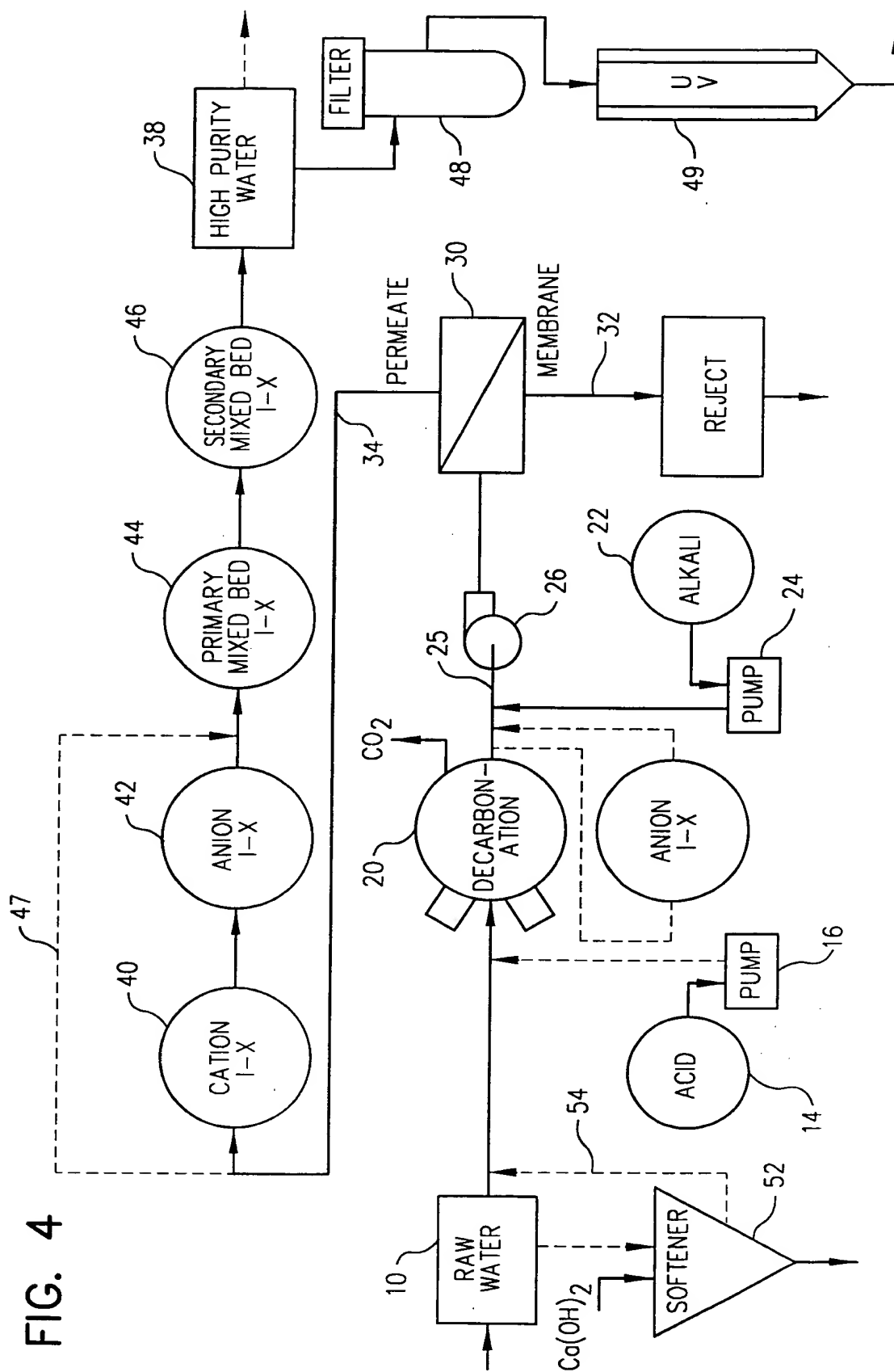
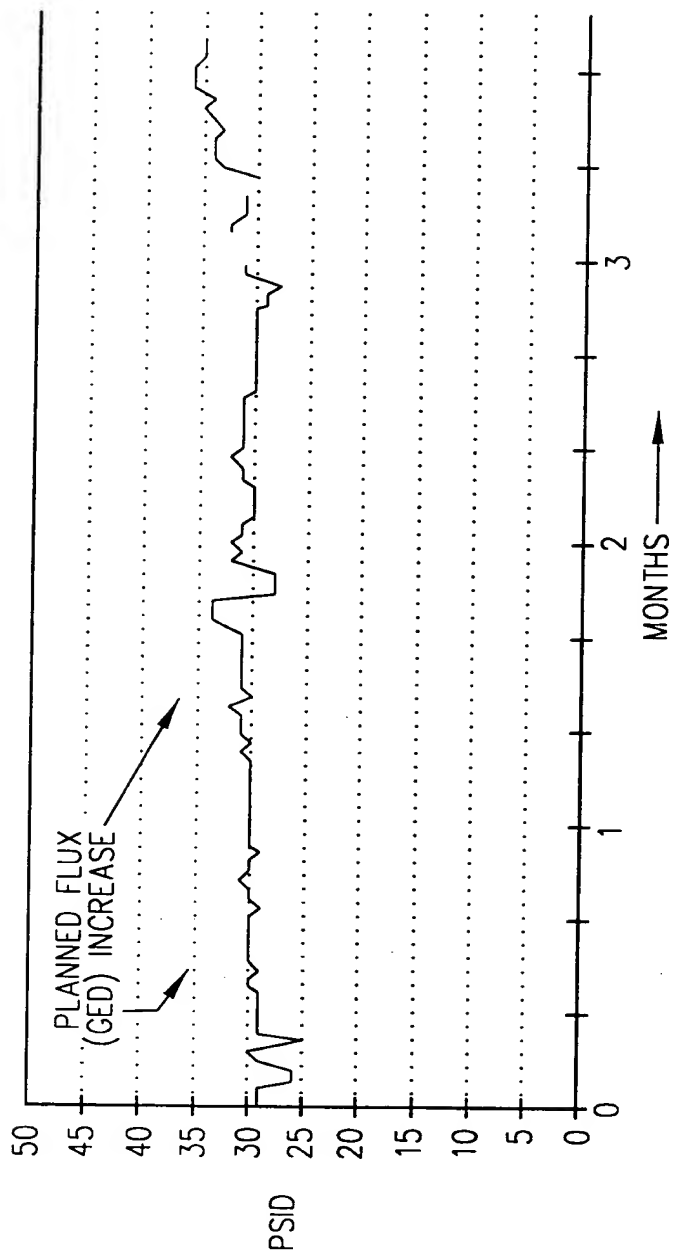


FIG. 4

FIG. 5



6/11

FIG. 7

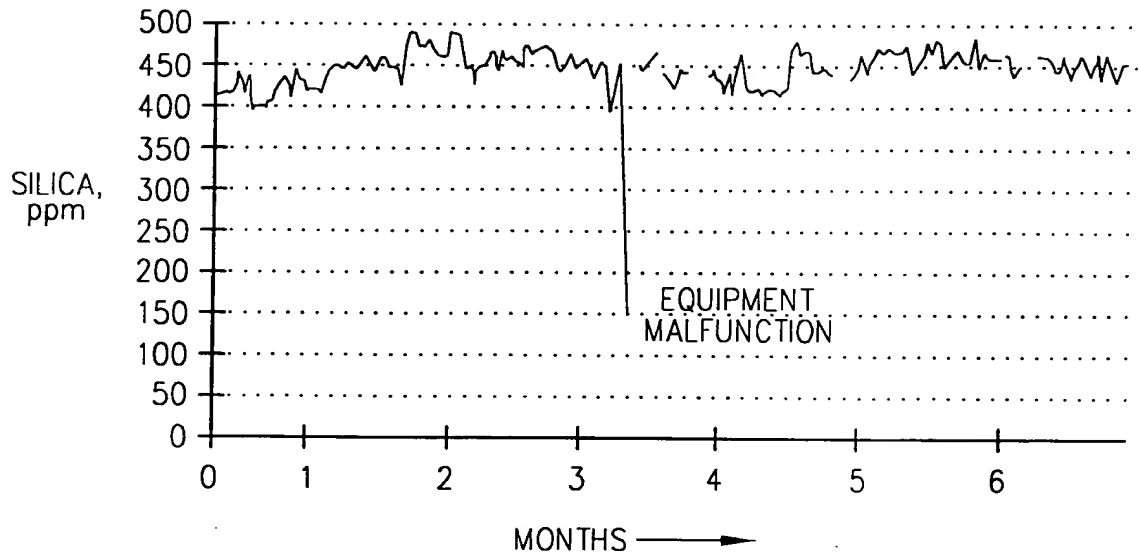
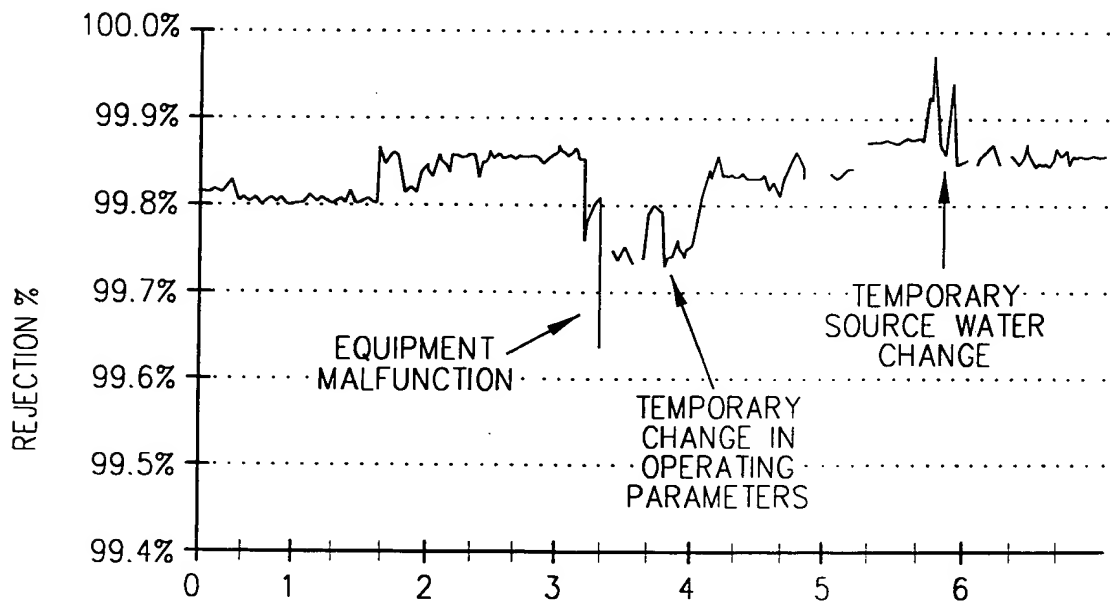


FIG. 8



The diagram illustrates a water treatment process for producing high purity water. The process begins with raw water (10) entering a weak acid cation exchange column (12). This column is regenerated with  $\text{Na}_2\text{CO}_3$  (13) and acid (16). The output of the cation exchange column passes through an anion exchange column (14), which is regenerated with alkali (24). The water then moves to a decarbonation stage (18), where  $\text{CO}_2$  (19) is added, and it passes through a filter (20). The output (22) is then mixed with  $\text{D}_2\text{O}$  (26) and passes through another anion exchange column (30), which is also regenerated with alkali (24). The output (32) is then mixed with reject water (34) and passes through a reject column (36). The final output (38) is high purity water, which is then filtered (48) and UV treated (49) before use (U).

FIG. 10

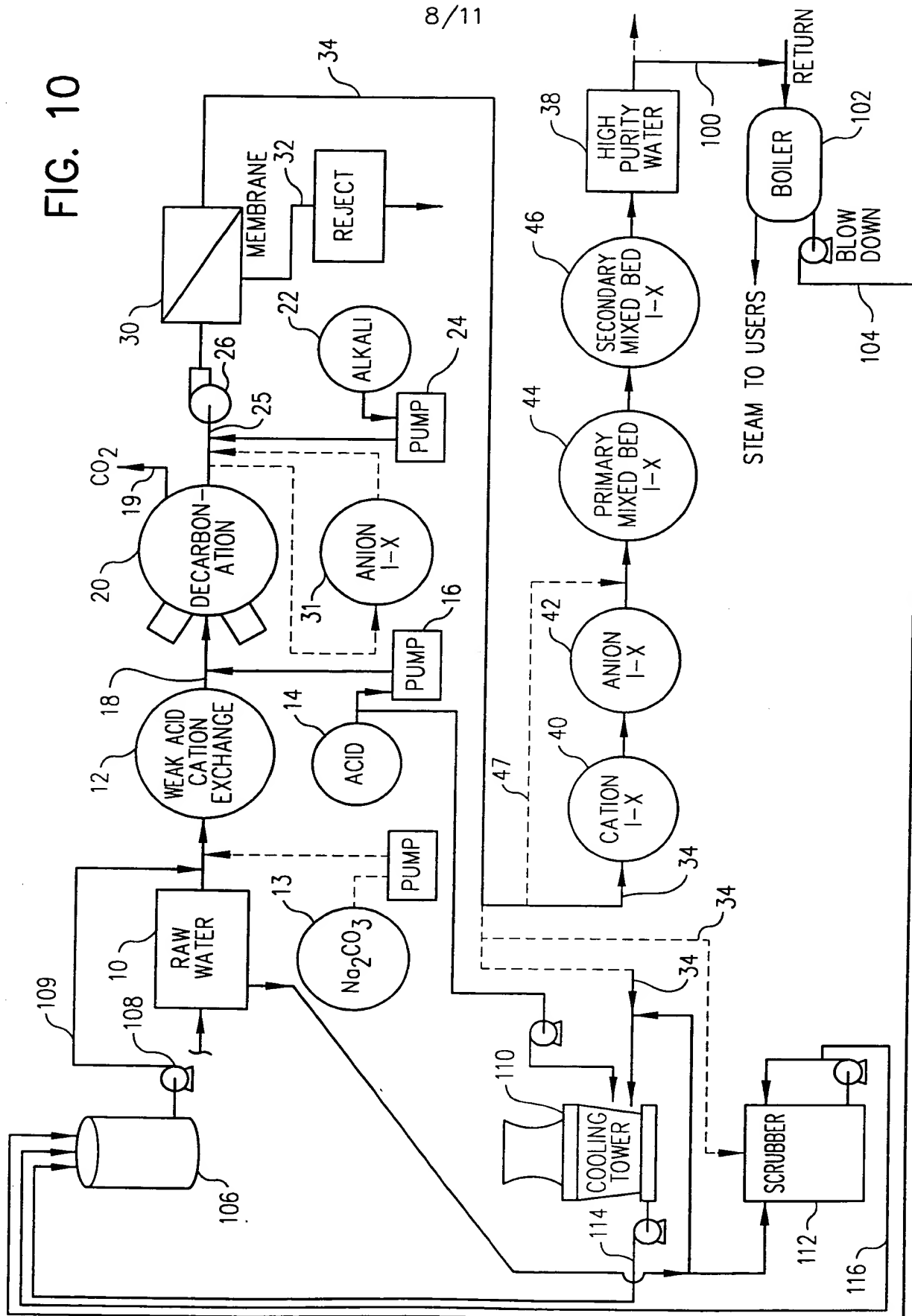


FIG. 11

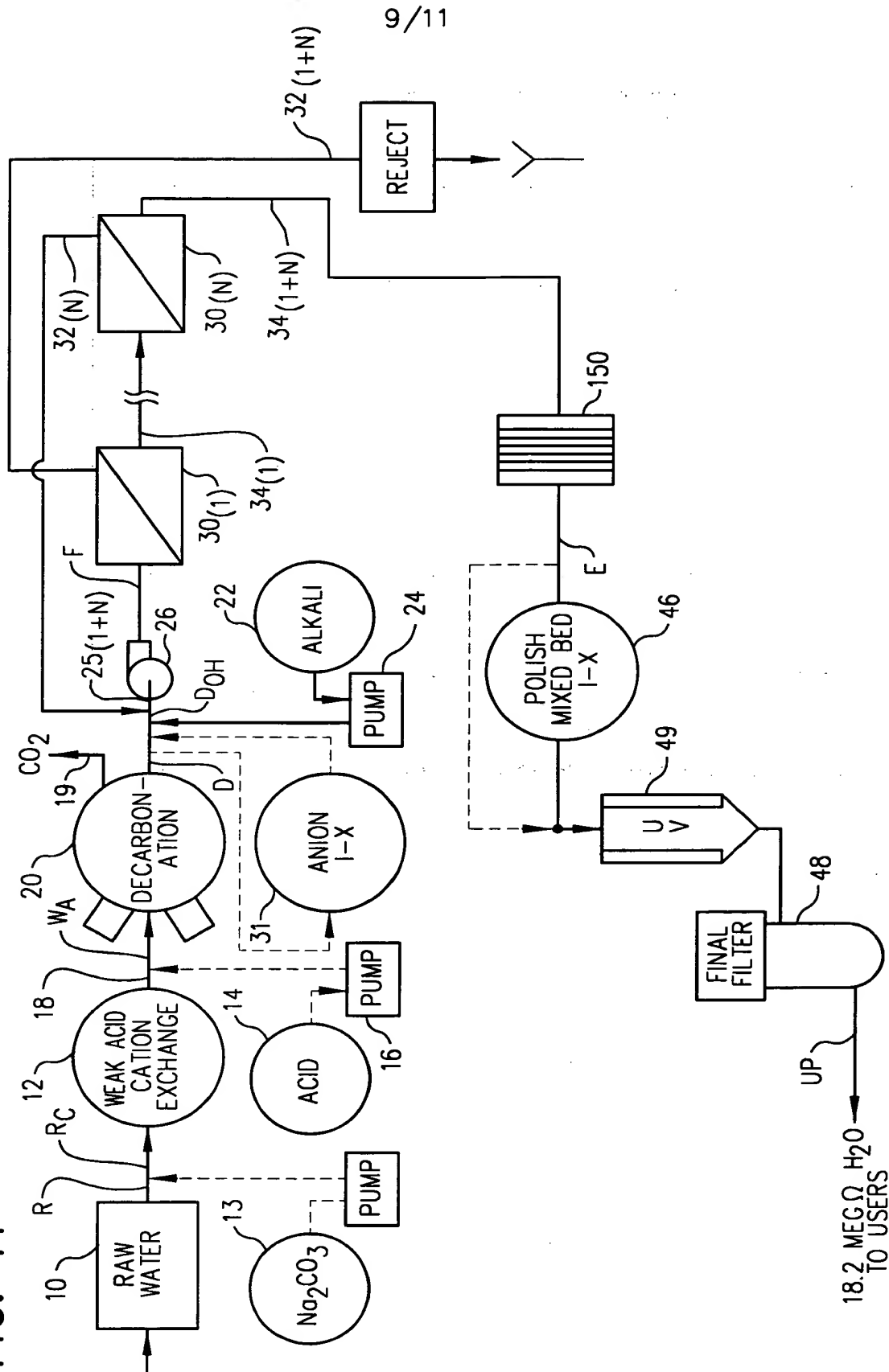


FIG. 12

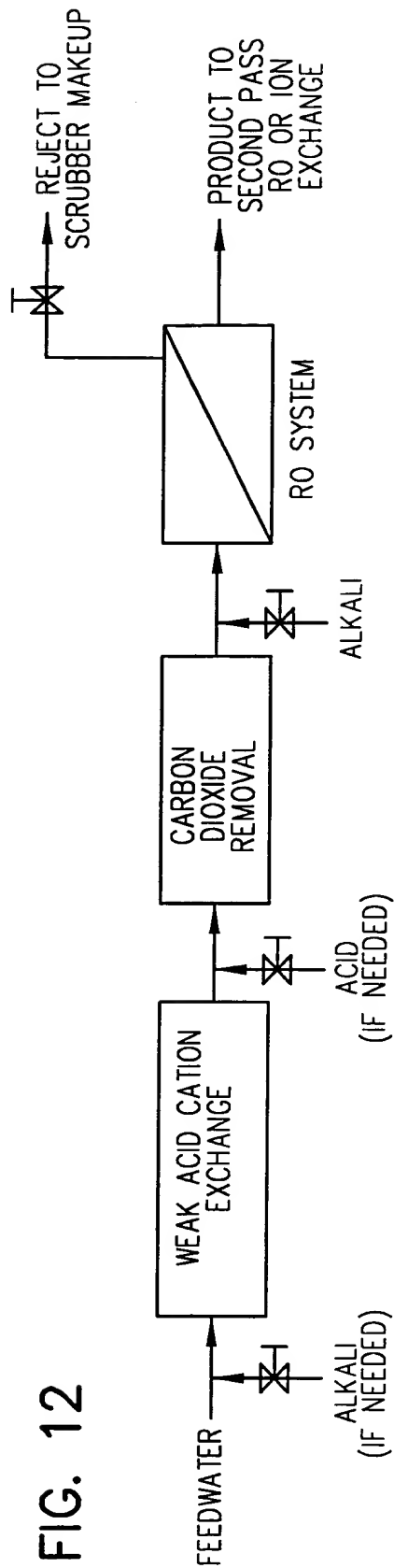


FIG. 13

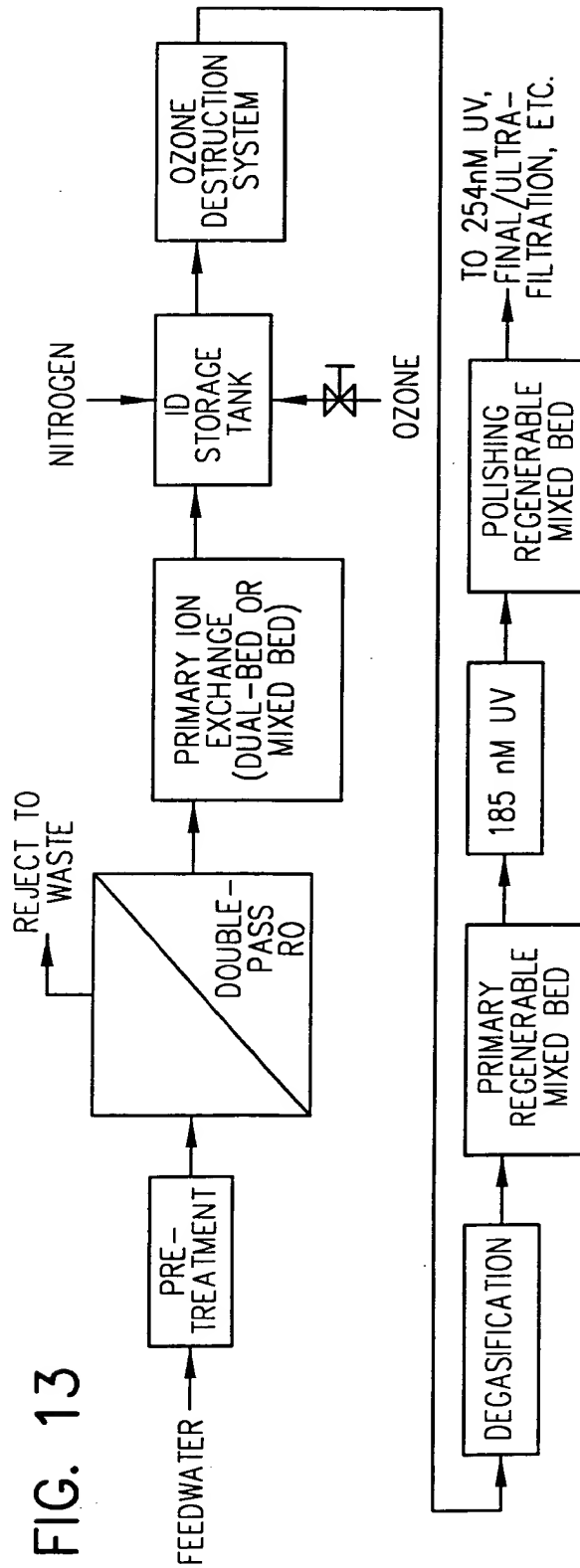


FIG. 14

